

REMARKS

Claims 33 and 53 have been canceled, and claims 84-90 have been added to this application. Therefore, claims 35-52, 54-57, 60-63, and 66-90 are now pending in this application.

Claims 33, 35-46, and 48-57 have been rejected under 35 USC § 103(a) as being unpatentable over UK Patent Application 2,072,516 to Simpson in view of EP 0252890A1 to Söderberg, U.S. Patent 4,934,362 to Braun, and U.S. Patent 2,105,183 to Cover. Applicants respectfully submit that this rejection cannot be sustained for the following reasons.

Firstly, the combination of Simpson, Söderberg, Braun, and Cover demonstrate that applicants' invention would not have been obvious to a person of ordinary skill.

Applicants' invention pertains to a filtering face mask where the exhalation valve has a single flexible flap, a non-centrally disposed stationary portion, and only one free portion. The valve is constructed such that the flexible flap is secured to the valve seat to have a curved profile and is pressed towards the seal surface in an abutting relationship therewith under any orientation of the mask body. Figure 3 shows one embodiment of applicants' invention:

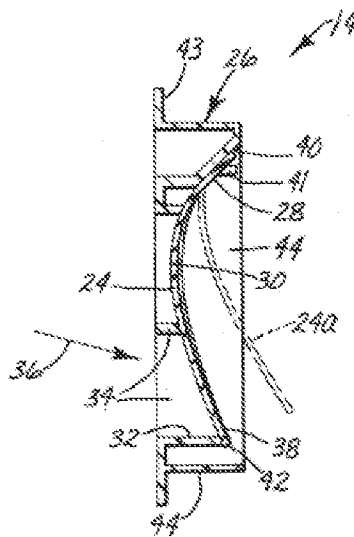


Fig. 3

While the combination of references teach or suggest various aspects of applicants' claimed invention, the combination of a whole would not have suggested applicants' invention to a person of ordinary skill.

The '516 UK patent application to Simpson, for example, discloses a cantilevered valve in Figure 2:

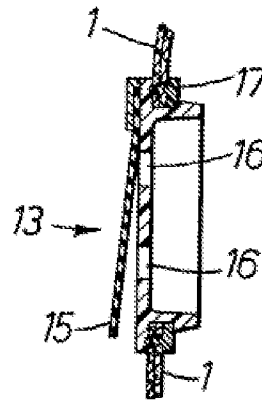
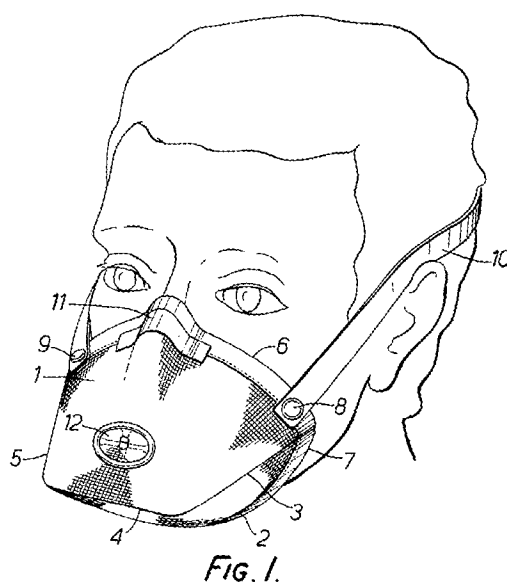


Fig. 2.

As is apparent, the Simpson flap is not curved when a fluid is not passing through the orifice. The Simpson flap also is not biased or pressed towards the seal surface in an abutting relationship with it under any orientation of the mask body. In fact, Simpson recognizes this deficiency in its valve construction. Accordingly, Simpson states that:

To prevent the inhalation of harmful atmosphere owing to leakage of the of each valve, the valve may be provided with an antechamber so arranged that, if the valve does leak in operation, the wearer inhales previously exhaled breath and not the harmful atmosphere.

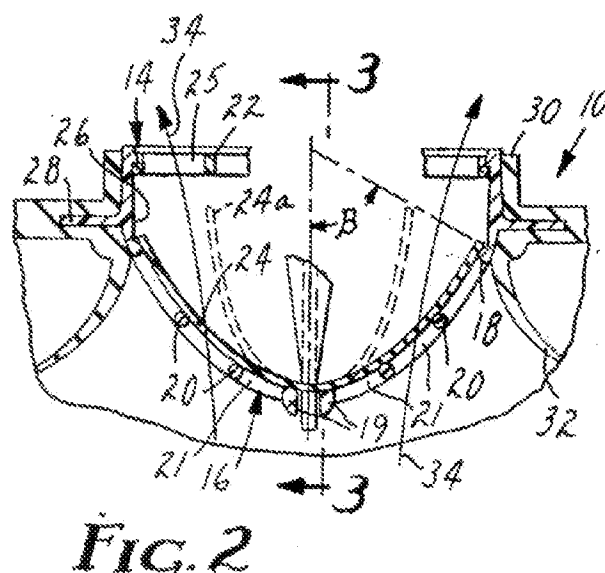
Thus, Simpson overcomes the difficulty in keeping the valve closed by providing an antechamber on the filtering facepiece. As is also seen in Figure 1, Simpson mounts the valve to the top of its duck-billed mask:



In this position, gravity can assist in keeping the valve flap closed. Accordingly it is apparent that Simpson does not appreciate applicants' invention or the benefits that are achieved from it.

The '890 European patent application to Söderberg does teach the benefit of having a flexible flap pressed against the seal surface but achieves this result in a manner different from applicants' invention. The Examiner's attention is directed to page 4, lines 14-23 where Söderberg states that "the rubber material is resilient and if the membrane is given a beveled edge 12, it will seal against the border 3 of the valve seat in a closed position, irrespective of the position assumed by the valve device." Thus, Söderberg asserts that a good seal can be achieved by providing the valve membrane with a beveled edge. Söderberg does not teach or suggest applicants' construction or the benefits that it provides.

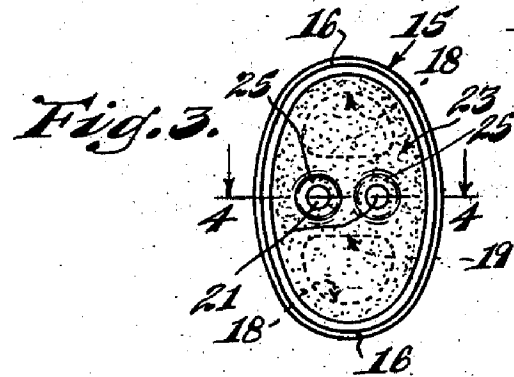
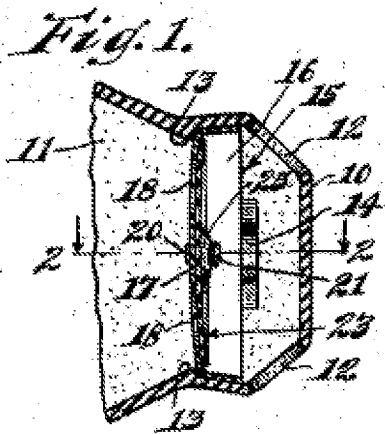
The '362 patent to Braun discloses a unidirectional valve that has a dual-flap system whereby the flap is centrally mounted to a parabolic valve seat:



Although Braun shows a unidirectional fluid valve that has a curved flap, Braun's dual-flap system has the two free portions and as such has the mounting hardware located centrally where it interferes with the movement of airflow through the valve orifice. The placement of the hardware in such a location can create higher pressure drops across the exhalation valve. In addition, the dual-flap system can allow exhaled air to be diverted upwardly where it can interfere with the vision of a person who wears eyeglasses. Finally, Braun does not teach or suggest how to provide a single-flap system where there is only one free portion and where that one free portion has the ability to be biased towards the seal surface to keep the flap in an abutting relationship with the seal surface under any orientation of the mask. In fact, Braun admits this much where he states in column 3, lines 40-43, that "if the flap is too long, it might not have sufficient resilience to become quickly seated."¹ As the Examiner is aware, the prior art must not only suggest the claimed invention to a person of ordinary skill, but it must also demonstrate that there would be a likelihood of success.

The '183 patent to Cover illustrates a dual-flap valve where the flap has a slight curvature to it:

¹ See also column 3, lines 44-49.



Cover also does not teach or suggest applicants' invention because it too discloses a dual-flap system where there is centrally-disposed mounting hardware that interferes with the movement of fluid through the exhalation valve during an exhalation. Like Braun, Cover's teaching of a dual-flap system presents very good evidence that applicants' invention would not have been obvious to a person of ordinary skill. Cover also does not teach or suggest how to provide a single-flap system when there is only one free portion and where that one free portion has the ability to be biased towards the seal surface to keep the flap in an abutting relationship with the seal surface under any orientation of the mask.

Secondly, the rejection of the pending claims under Section 103 relies on a combination of four different references and presents a "mosaic-type" piecing together of these references. This four-reference combination typifies an improper hindsight reconstruction of an applicant's invention, which reconstruction has been criticized and dismissed by the Federal Circuit.² In *Interconnect Planning*, the Federal Circuit noted that:

[t]he claims were used as a frame, and individual, naked parts of separate prior art references were employed as a mosaic to recreate a facsimile of the claimed invention.

² *Interconnect Planning Corp. v. Thomas E. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985), quoting *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552, 220 USPQ 303, 312 (Fed. Cir. 1983) *cert. denied*, 469 U.S. 851 (1984); see also *In re Shuman*, 361 F.2d 1008, 1012, 150 USPQ 54, 57 (CCPA 1966) ("It is impermissible to first ascertain factually what appellants *did* and then view the prior art in such a manner as to select from the random facts of that art only those which may be modified and then utilized to reconstruct appellants' invention from such prior art.").

The attempt to assemble teachings from the various cited references is at odds with the settled body of the law that cautions against making hindsight combination of references:

It is difficult but necessary that the decision maker forget what he or she has been taught at trial about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art.³

Although applicants' realize that the reliance on the teachings of a relatively large number of references in rejecting a patent application for obviousness does not, without more, weigh against the holding of obviousness, *In re Gorham*, 18 USPQ2d 1885 (Fed. Cir. 1991), the present record, however, is not a situation where there are numerous references that teach or suggest the invention and its benefits. Nor does the present record reflect a situation where each of the claimed elements appear in the prior art in the same configurations, serving the same functions, to achieve the results suggested in the prior art.⁴ Instead, the present record shows that the cited references each took very different approaches to purge exhaled air and prevent inward leakage. Simpson used a flapper valve with an antechamber, Söderberg used a flapper valve with beveled edge, and Braun and Cover used dual-flap systems.

Thirdly, the sequence of valve development presents very good evidence of the nonobviousness of the present invention. The '183 patent to Cover was first published in January of 1938. Yet, none of its teachings were used by Simpson (filed March 1980) or by Söderberg (filed March 1986). Despite Cover's teachings being known to persons of ordinary skill for over 40 years, its technology did not find its way into the flapper-style valve art. Accordingly, Cover presents very good evidence of nonobviousness.⁵ And the exhalation valve developments that occurred shortly before applicants' invention, the '362 patent to Braun, further show that the art did not appreciate applicants' invention. Under such circumstances, the cited prior art tells a storey of the nonobviousness of applicants' invention.

³ *W.L. Gore & Associates, Inc.*, 721 F.2d at 1552, 200 USPQ at 313.

⁴ See *Gorham* at p. 1889 ("the claim elements appear in the prior art in the same configurations, serving the same functions, to achieve the results suggested in prior art.").

⁵ *In re Ehringer*, 146 USPQ 31, 37 (CCPA 1965) ("Thus, over 40 years elapsed in this art prior to appellant's filing date without anyone suggesting so far as the cited art shows, a non-sag *thoriated* tungsten filament or any way of producing it.").

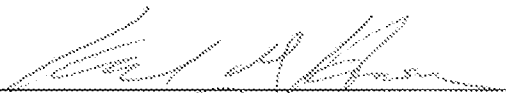
For these reasons, applicants submit that the application is in condition for allowance.
Reconsideration of the outstanding rejections is respectfully requested.

Respectfully submitted,

July 7, 2006

Date

By:



Karl G. Hanson, Reg. No.: 32,900

Telephone No.: 651-736-7776

Office of Intellectual Property Counsel
3M Innovative Properties Company
Facsimile No.: 651-736-3833